AMENDMENTS TO THE SPECIFICATION

Please amend the specification as indicated below:

Delete the paragraph at page 1, before the title:

~~DESCRIPTION~~

Paragraph beginning at page 1, line 1:

~~Technical~~ Field of the Invention

Paragraph beginning at page 1, line 7:

Background ~~Art~~ of the Invention

Delete the paragraphs beginning at page 3, line 7:

~~Disclosure of the Invention~~

~~Problems to be Solved by the Invention~~

Insert the following paragraph at page 3, line 21:

Summary of the Invention

[0015] Then, it is an object of the present invention to provide a radar in which the detection accuracy of a target is increased in such a way that a spectral peak generated by a reflected wave from the target included in a frequency spectrum of a beat signal is more ~~surely~~ reliably detected on the basis of the frequency spectrum.

Delete the paragraph beginning at page 4, line 3:

~~Means for Solving the Problems~~

[0016] In the present invention, a radar for detecting a target on the basis of a peak frequency of a peak appearing in the frequency spectrum, the radar comprises means for transmitting a frequency modulated transmission signal and for generating a beat signal containing a component of a frequency equal to the difference between the frequency of a reflection signal from the target of the transmission signal and the frequency of the transmission signal; means for determining a frequency spectrum of the beat signal; and means for determining the peak frequency of a peak appearing in the frequency spectrum. ~~In t~~ The radar~~,~~ includes means for setting a first threshold value on the basis of the intensity of background noise or the reflection signal intensity of a target having a fixed reflection sectional area, for setting a second threshold value in a fixed frequency region in the vicinity of each peak regarding a plurality of peaks exceeding the first threshold value appearing in the frequency spectrum, and for extracting a peak exceeding the second threshold value ~~is contained~~.

[0018] Furthermore, in the present invention, the second threshold value is heightened in a fixed band of the base portion in accordance with the expansion in the direction of the frequency axis of the peak caused by carrier/noise (C/N) ~~C/N~~ characteristics of an oscillator for generating the transmission signal.

Delete the paragraph beginning at page 5, line 22:

~~Advantages~~

Paragraph at page 10, line 9:

~~Best Mode for Carrying Out~~ Detailed Description of the Invention

[0048] Fig. 1 is a block diagram showing the whole structure of the radar. A transmission-wave modulation portion 16 outputs digital data of a modulation signal to a DA converter 14 in order. A voltage-controlled oscillator ~~VC01~~ VCO 1 changes the oscillation frequency in accordance with a control voltage outputted from the DA converter 14. Thus, the oscillation frequency ~~of the oscillation frequency~~ of the ~~VC01~~ VCO 1 is continuously FM modulated to generate a triangular wave. An isolator 2 transmits an oscillation signal from the ~~VC01~~ VCO 1 to the side of a coupler 3 and prevents the incidence of a reflection signal to the ~~VC01~~ VCO 1. The coupler 3 transmits the signal coming through the isolator 2 to the side of a circulator 4 and simultaneously gives a part, corresponding to a fixed allocation, of the transmission signal as a local signal Lo to a mixer 6. The circulator 4 transmits the transmission signal to the side of an antenna 5 and also gives a reception signal from the antenna 5 to the mixer 6. The antenna 5 transmits the FM modulated transmission signal as a continuous wave of the ~~VC01~~ VCO 1 and receives a reflection signal coming from the same direction. Furthermore, the antenna 5 periodically changes the direction of the beam over the range of a detection angle.

[0051] Regarding the data in which the DC component is removed by the DC elimination portion 9, a window-function processing portion 15 gets data out by using a window function of a fixed shape. When the data is obtained by using the window function, the truncation error, caused when FFT computation is performed by cutting out a time waveform in a limited sampling interval, is suppressed. For example, a window-function processing such as Hanning window, Hamming window, Blackman-Harris window, etc., is performed.

[0055] Fig. 2 shows an example of a deviation from the frequency change between a transmission signal TXS and a reception signal RXS caused by the distance to a target and the relative speed. The transmission signal TXS is a frequency-modulated signal having a center frequency fo as the frequency center to produce a triangular wave. The frequency difference between a transmission signal TXS and a reception signal RXS when the frequency of the transmission signal increases is ~~an~~ up beat frequency fBU, and the frequency difference between a transmission signal TXS and a reception signal RXS when the frequency of the transmission signal decreases is ~~an~~ a down beat frequency fBD. The deviation (time difference) on the time axis between the triangular waves of the transmission signal TXS and the reception signal RXS corresponds to the roundtrip time of a radio wave to a target from the antenna. Furthermore, the deviation on the frequency axis between a transmission signal TXS and a reception signal RXS is the measurement of a Doppler shift and caused by the relative speed of a target to the antenna. The values of the up beat fBU and the down beat fBD change depending on the time difference and the amount of the Doppler shift. On the contrary, the distance to a target from a radar and the relative speed of a target to the radar can be calculated by detection of the up beat and down beat frequencies.

[0057] In succession, a plurality of peaks in the frequency spectrum ~~is~~ are detected, a target peak in the peaks is extracted, and ~~the~~ a peak frequency is determined (S5).

[0068] The way of expansion of the base of a frequency spectrum is different depending on the kind of ~~a~~ window function. Furthermore, it is required to note that the way of expansion of the base of a spectrum is different between the case where the target peak position of a frequency spectrum is in agreement with the FFT ranger bin

position and the case where both positions are different from each other (for example, when the frequency resolution of the FFT is 1 kHz, there is the beat frequency at a frequency which is not an integral multiple of 1 kHz). In consideration of these, the case in which the base is most expanded because of the target peak position and the expansion of the spectrum is used as the reference.

[0069] Fig. 6 shows the state ~~of things~~ of the base of a spectrum due to a window function and more particularly the appearance of noise peaks caused by added noise ~~to that.~~

[0072] Fig. 7 shows an example of the range of variation of noise intensity in the vicinity of the peak due to the expansion of the spectrum of a window function and mixing of noise. In Fig. 7 (A), C represents a theoretical value, U represents the level of the upper limit due to the mixing of noise, and D represents the level of the lower limit due to the mixing of noise. Then, as shown in Fig. 7 (B), a second threshold value TH2 exceeding the level of the upper limit is set in consideration of the mixing of noise ~~is set~~.

[0073] However, since, in peaks in the frequency spectrum of a beat signal, it is not clear which is a target peak or a noise peak, ~~it is needed to determine which is~~ determination of the base portion of the peak on which the threshold value TH2 is set is needed. Then, the following is performed.